

Patent claims

- 1 1. A method for determining the position of at least one second transmitting and  
2 receiving device in respect of a first transmitting and receiving device in a  
3 passive access control system operating in the GHz range, comprising the steps  
4 of:
  - 5 a) using a radar method, particularly an FM-CW radar method, by which  
6 signals are received in the first transmitting and receiving device on the left-  
7 hand side and right-hand side of a modulation frequency, and
  - 8 b) determining the distance of two signals closest to the left-hand side and  
9 right-hand side modulation frequency, wherein the distance of the two  
10 signals is proportional to the distance between the first transmitting and  
11 receiving device and at least the second transmitting and receiving device so  
12 that multipath propagations are not taken into consideration.
- 1 2. The method according to claim 1, wherein the distance of the signals is  
2 determined by means of at least one bandpass filter wherein in a first  
3 measurement, starting out with a predefined lowest bandwidth and if signals are  
4 not detected within this bandwidth, the distance of the bottom and top limits of  
5 at least one bandpass filter is increased by the modulation frequency for the next  
6 measurement.
- 1 3. The method according to claim 2, wherein each subsequent measurement takes  
2 place with a predefined bandwidth in each case.
- 1 4. The method according to claim 3, wherein different ranges are assigned to  
2 different top and bottom measurements.

- 1    5.    A transmitting and receiving device for determining the position of at least one  
2        further transmitting and receiving device, wherein the transmitting and receiving  
3        device is embodied as an FM-CW radar transmitting and receiving device and  
4        comprises at least one bandpass filter to determine the distance of two signals  
5        lying closest to the left-hand side and right-hand side of the modulation  
6        frequency.
- 1    6.    The transmitting and receiving device according to claim 5, wherein the at least  
2        one bandpass filter can be varied to perform consecutive measurements with  
3        different increasing bandwidths in each case.
- 1    7.    The transmitting and receiving device according to claim 5, wherein the  
2        transmitting and receiving device has two bandpass filters to detect signals lying  
3        on the left-hand side and right-hand side of the modulation frequency,  
4        respectively.

- 1 8. An arrangement comprising:  
2 - a first transmitting and receiving device,  
3 - a second transmitting and receiving device, wherein  
4 - the first transmitting and receiving device can determine the position of the  
5 at least second transmitting and receiving device,  
6 - the first transmitting and receiving device is embodied as an FM-CW radar  
7 transmitting and receiving device and comprises at least one bandpass filter  
8 to determine the distance of two signals lying closest to the left-hand side  
9 and right-hand side of the modulation frequency,  
10 - the first transmitting and receiving device is embodied as the base station of  
11 a vehicle, and wherein  
12 - the at least second transmitting and receiving device as an ID transmitter.
- 1 9. The arrangement according to claim 8, wherein the second transmitting and  
2 receiving device is embodied as a reflector that returns the signals of the first  
3 transmitting and receiving device in a modulated way.
- 1 10. The arrangement according to claim 8, wherein the at least one bandpass filter  
2 can be varied to perform consecutive measurements with different increasing  
3 bandwidths in each case.
- 1 11. The arrangement according to claim 8, wherein the first transmitting and  
2 receiving device has two bandpass filters to detect signals lying on the left-hand  
3 side and right-hand side of the modulation frequency, respectively.